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ANNUAL AND COHORT DROPOUT RATES
IN BOSTON PUBLIC SCHOOLS:
FOCUS ON PROGRAMMATIC AND
DEMOGRAPHIC CHARACTERISTICS
1989

R & D Research Report

REF

STATISTICS



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ANNUAL AND COHORT DROPOUT RATES
IN BOSTON PUBLIC SCHOOLS:
FOCUS ON PROGRAMMATIC AND
DEMOGRAPHIC CHARACTERISTICS
1989

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BOSTON PUBLIC SCHOOLS

November, 1989

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**ANNUAL AND COHORT DROPOUT RATES IN BOSTON PUBLIC SCHOOLS:
FOCUS ON PROGRAMMATIC AND DEMOGRAPHIC CHARACTERISTICS: 1989**

EXECUTIVE SUMMARY

I. Overview

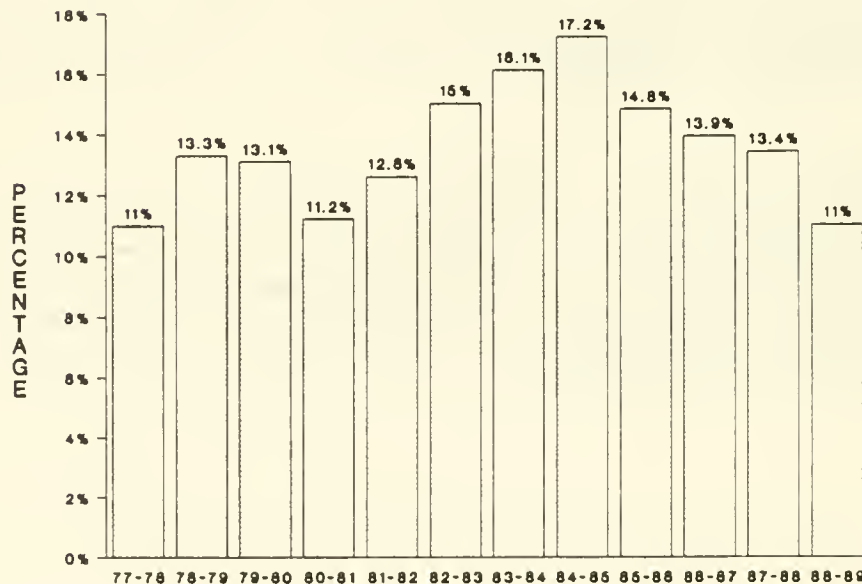
Beginning with data reported for the 1987-1988 school year, Boston Public Schools introduced a number of improvements in its methods of counting and reporting on dropouts. This work led to two comprehensive reports, "Annual and Cohort Dropout Rates in Boston Public Schools: Focus on Methodology," (November, 1988) and "Annual and Cohort Dropout Rates in Boston Public Schools: Focus on Programmatic and Demographic Characteristics" (February, 1989). The first report introduced the changes, and the second provided a series of analyses of dropout data, some of which had not previously been reported for Boston. The present report provides data for the most recent year and repeats many of the same analyses.

Annual rate data provide a current "snapshot," indicating how many students drop out in a given year. **Cohort rate data** address the long term holding power of the schools; they answer the question, "Of those who start 9th grade, how many eventually drop out before finishing high school?" In both types of analysis, students who transfer out of BPS to other school systems are excluded from the population.

II. Historical Trends in Annual Dropout Rates

- Annual dropout rates for grades 9-12 increased for four years, peaking at 17.2% in 1984-1985. For each of the last four years the annual rate has declined, reaching 11.0% in 1988-1989 (EXHIBIT 1, TABLE A-1). This is the lowest annual dropout rate since 1977-1978.

ANNUAL RATE DROPOUT DATA FOR 1977-78 THROUGH 1988-89
(GRADE 9-12 ONLY)
TRANSFERS OUT OF BPS EXCLUDED

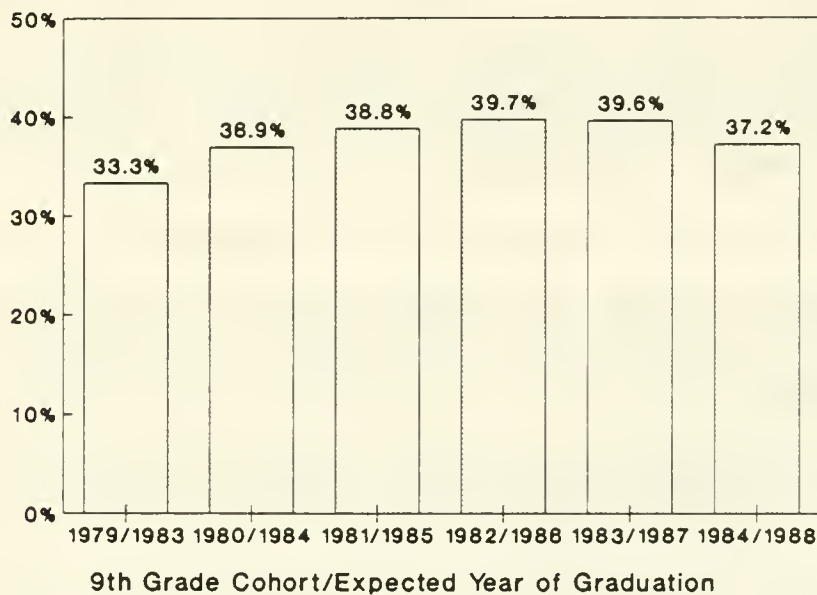


- Over time annual dropout rates have been lowest for Asian students and highest for Hispanic students. Blacks and Whites have fallen between these two extremes, with dropout rates for Blacks usually slightly lower than that for Whites until the last two years (EXHIBIT 2 and TABLE A-1).

III. Historical Trends in Cohort Dropout Rates

- Cohort rates had been increasing in the 1979 through 1982 9th grade cohorts and then had remained stable for the 1983 cohort (students expected to graduate in 1987). For the 1984 cohort, there was a decline in the dropout rate for all racial/ethnic groups and the overall rate was 37.2%, down 2.4 percentage points from the previous year (EXHIBITS 11 and 12; TABLE A-2).

9th Grade Cohort Dropout Rates Systemwide
Excluding Students Who Transfer To Other School Systems



- Over time the cohort dropout rates have been lowest for Asian students and highest for Hispanic students. Blacks and Whites have fallen between these two extremes, with dropout rates for Blacks slightly lower than those for Whites (EXHIBIT 12; TABLE A-2).

IV. Demographic Characteristics

1) Racial/Ethnic Group and Gender (Regular Education Only)

- In both annual rate and cohort analyses, females drop out at a lower rate than do males. The difference is usually larger among Black and Asian students than it is among White and Hispanic students (EXHIBITS 5A and 5B, 14A and 14B).
- When examination school students are excluded from the comparisons among Regular Education students, the annual dropout rate for all four major racial/ethnic groups increases - especially that of White and Asian students. Overall, racial/ethnic differences are reduced and some of the relationships change. For instance, the dropout rate among Asian males is actually slightly higher than that among Black males. The dropout rate for Blacks is 2.6 percentage points lower than that for Whites (EXHIBITS 5A and 5B).
- Among the students in the 1984 cohort who were in Regular Education excluding the examination schools, the cohort dropout rate for White students was higher than that among Hispanic students. The cohort rate for Blacks was considerably lower, and the rate for Asian students was the lowest (EXHIBIT 14B).

2) Grade and Age in Relationship to Grade

- In part because the great majority of 6th-8th grade students are under 16, their annual dropout rates are quite low - 1.2% in 1986-87 and 1987-88, and 0.9% in 1988-1989. (EXHIBIT 3).
- Tenth grade students have the highest annual dropout rate, although the absolute number of dropouts is highest in 9th grade (EXHIBIT 4).
- Being at least two years overaged for one's grade strongly predicts dropout. For instance, in the most recent annual rate data (1988-1989), the comparison among 11th grade students (all of whom should have been at least 16 and therefore old enough to drop out) is striking. Among the students who were at least two years over the minimum age, 25.5% dropped out while only 5.9% of the other students did so (EXHIBIT 4).

3) School

- Annual dropout rates for Regular Education 9th through 12th graders varied from 0.1% (Boston Latin School) to 24.8% (Jamaica Plain). Dropout rates across schools enrolling 6th-8th grade students were quite low and gen-

erally similar to each other; the range was from 0% to 2.2% dropout for regular BPS schools (EXHIBITS 6 and 7).

- Cohort dropout rates by school for the 1984 cohort were calculated only for students who did not transfer across BPS schools, in order to avoid "attributing" a student's dropout or continuation to a given school when a student had attended more than one. Comparisons were made based on Regular Education students. By far the lowest rates were recorded for the three examination schools, but four other schools had rates at or below 28%. The highest cohort dropout rate for a school was 56.1%. For the 563 (out of a total of 2841 Regular Education students) who did transfer across BPS schools, the cohort dropout rate was quite high (EXHIBIT 13).

V. Educational Programs

1) Special Education

- In both annual and cohort analyses, Regular Education students drop out less than students with any Special Needs classification. Among Special Needs students, those with mainstream prototypes who spend the most time outside the regular classroom (Prototype .3) are most likely to drop out; this pattern is most clear for the cohort rate data (EXHIBITS 8 and 15).

2) Bilingual Education

- Analysis of Bilingual Program data was restricted to students whose first language was not English. Those who participated in Bilingual Education programs had a somewhat lower annual dropout rate than did Regular Education students. There was considerable variation among the language groups in the comparison between annual dropout rates. For cohort data the dropout rate for Bilingual Program students was slightly higher than the rate for Regular Education students. Since the numbers in the analyses were relatively small, especially for the language groups separately, these results should be interpreted cautiously (EXHIBITS 9 and 16).

3) Vocational Education

- Among Regular Education students enrolled in schools which have Vocational Education students, participants in Vocational Education programs were less likely to drop out than were others. This was true in both annual rate and cohort rate data (EXHIBITS 10 and 17).

VI. Conclusions and Implications for Further Analysis

- As a result of the analyses to date, enough is now known so that an "early warning" indicator of potential dropout could be developed and tested. Such an indicator would make it possible to target prevention efforts for students still in middle school.
- The relationship between predictors of dropout and dropout may vary somewhat by gender and racial/ethnic group. These possibly different relationships should be explored, because they could contribute to a more precise understanding of the antecedents of dropout and to better design of dropout prevention efforts.

INTRODUCTION

Last year the Office of Research and Development issued a report titled "Annual and Cohort Dropout Rates in Boston Public Schools: Focus on Methodology" (November, 1988). The major purpose of that report was to communicate a number of changes in the methods for counting and reporting dropouts which BPS had adopted. In February, 1989, "Annual and Cohort Dropout Rates in Boston Public Schools: Focus on Programmatic and Demographic Characteristics" was published. It provided detailed analyses of dropout data, some of which had not been reported before for Boston. The present report is designed as a follow-up, repeating most (though not all) of the analyses and incorporating the most recent data.

The focus of this report (and of previous reports on dropout from the Office of Research and Development) is on students who meet the legal definition for dropout - they are over 16 and have been discharged as having dropped out, or they have "walked away," are over 16, and are presumed to have dropped out. Students under 16 who are not attending school are legally truant. Because of this definition, dropout is expected to be rare among middle school students because most of them are under 16 years old.

For the sake of completeness, there is a Technical Appendix which provides detail on how the outcome categories for students are defined and how the cohort samples are chosen.

A Note on Annual and Cohort Dropout Rates

It is important to understand the distinction between annual and cohort dropout rates and the information provided by each.

Annual dropout rate analyses are designed to answer questions such as "How many high school students dropped out in 1988-1989?" The most recent annual rate reflects the most current situation in the schools; it is a "snapshot" and reflects only one year's worth of information. Nonetheless, it is crucial for a school system to know how many students it loses each year.

Cohort dropout rate analyses are designed to answer a question of equal if not even greater importance: "Of the students who begin 9th grade, how many drop out before graduation?" This second question asks about the long term holding power of the schools. In cohort analyses a defined group is followed up for a specified period of time; one final outcome is designated for each student in the cohort, depending on what they did and when. For instance, a student who transferred out of BPS in 10th grade, returned in 11th grade, and then dropped out, would be counted as a dropout. Ninth grade has been chosen as the starting point for the BPS studies, and students are followed for five years instead

of four (past the expected graduation date in order to follow up students who may have been retained in grade at some point).

Each type of measure (annual rate and cohort rate) can contribute to understanding dropout. Cohort studies make it possible to develop predictors of future outcomes by following up one group of students for several years. However, annual rates provide a fuller and more current picture of the whole student population, since students who have entered BPS in 10th, 11th, and 12th grades are also included in the annual rate analyses.

Questions about change over time in dropout rates or in relationships between other factors and dropout can be answered if there are at least several years of annual rate and cohort rate data available. BPS now has 12 years of annual rate data (beginning in 1977-1978) calculated using consistent records and methodology. Of course there are fewer cohorts available (since a cohort is not "complete" until five years after it starts), but BPS now has six cohorts (the first one started 9th grade in 1979) available for comparison.

In this report dropout - both annual rate and cohort - will be examined in relation to racial/ethnic group, gender, grade, high school, and educational program. The availability of both annual and cohort analyses allows for exploration of both short-term (within one year) and long-term relationships between these factors and dropout. In addition, comparisons to findings in the previous report will be made as appropriate. The end result will be a clearer picture of students who are at risk of dropping out.

Differing Approaches to Calculating and Reporting Dropout Data

In making comparisons of dropout rates reported for Boston and for other school systems, it is important to distinguish between annual and cohort dropout rates; they are usually very different. Furthermore, the methods of counting and reporting on dropouts vary substantially across school districts and states. Because of these differences, comparisons across school systems should be made with caution.

Chapter 188 requires the Commonwealth of Massachusetts to report dropout data for all of its school districts. Thus there is more than one source of data on Boston's dropout rate, a potential source of confusion. Annual dropout rates reported by the state will differ from those reported by BPS in part because October 1 enrollment is used instead of cumulative enrollment. Cohort dropout rates will differ because the State's method is an estimated projection into the future based on current annual rate data, while BPS does an actual count for students who began 9th grade at some time in the past.

Note: In a few of the analyses which follow, percentages may not total to 100.0 because of rounding error.

ANALYSES OF ANNUAL RATE DROPOUT DATA

The first exhibit is historical, showing the overall dropout rate for 9th through 12th grade students for every year from 1977-1978 through 1988-1989. The second exhibit shows dropout data for 6th through 8th graders for 1986-1987 through 1988-1989. Subsequent analyses concentrate on data for the 1988-1989 school year. These include a series of demographic breakdowns (grade, school, racial/ethnic group, etc.) and several comparisons across educational programs (Special Education, Bilingual Education, and Vocational Education).

Criteria for Inclusion in Annual Rate Data

All students assigned to the grades being considered (6-8 or 9-12) at any time between July 1 at the start of the school year and June 30 at the end of the school year are potentially eligible for inclusion. Thus, the population reflects cumulative enrollment over the course of the whole year. The following groups are not included in the final population on which dropout percentages are based:

- students who do not actually attend a BPS school but are instead placed in a private Special Needs school
- students newly assigned from outside BPS who never attend a BPS school
- students included in a year's records when they had actually withdrawn late in the preceding school year (after school assignments were done)
- students with incorrect school codes (e.g., an elementary school code - this clerical error very rarely occurs)
- students whose withdrawal code is "error" (Usually employed to correct some mistake in assignment, this code is rarely used.)
- students assigned to Boston Public Schools who transfer to a school system outside of BPS.

Details on the use of BPS discharge codes and the student's age to determine outcome categories are included in the Technical Appendix.

EXHIBIT 1

ANNUAL RATES OF DROPOUT FOR 1977-1978 THROUGH 1988-1989 (GRADES 9-12 ONLY)

Description of the Analysis

The data in this exhibit provide the broadest summary of annual dropout trends over time. Grades 9-12 are presented throughout, and students who left BPS to transfer to other systems have been eliminated from the population counted.

Specific descriptions of how students are assigned to one of the four outcome categories shown below (Stay in School or Graduate; Dropout; Probable Dropout; and Other Loss) are presented in the Technical Appendix. When annual rate data are summarized, the "Dropout" and the "Probable Dropout" categories are combined to give one overall dropout rate.

Table A-1 in the Data Appendix shows the complete data on which this analysis is based.

Findings

The data indicate that for the first several years covered there was no noticeable trend in dropout rates. Then, in 1981-1982 a pattern of yearly increases began, with a peak in 1984-1985. In recent years, the rate has declined, reaching 11.0% in 1988-1989, a return to the level of 1977-1978.

Below, the more detailed breakdown for 9th through 12th grade students for 1988-1989 is shown:

	<u>OUTCOME</u>	<u># OF STUDENTS</u>	<u>PERCENT</u>
<u>GRADES 9-12:</u>	Stay in School or Graduate	14754	88.7%
	Dropout	1517	9.1%
	Probable Dropout	313	1.9%
	Other Loss	51	0.3%
	Analysis	<u>16635*</u>	<u>100.0%</u>

Overall dropout rate for 1988-1989: 11.0%

* An additional 1725 students transferred out of BPS.

EXHIBIT 1
ANNUAL RATE DROPOUT DATA FOR 1977-78 THROUGH 1988-89
(GRADES 9-12 ONLY)
TRANSFERS OUT OF BPS EXCLUDED

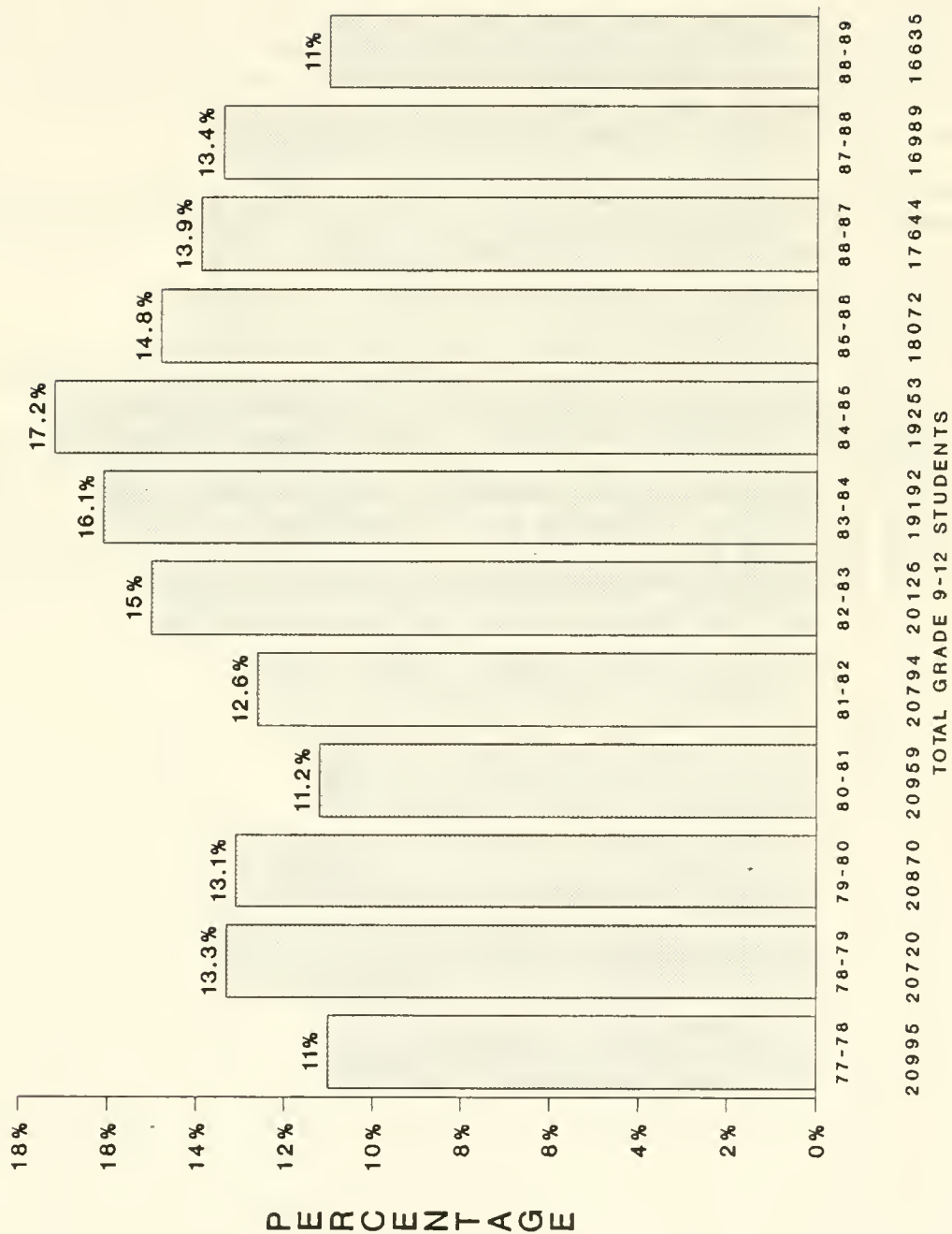


EXHIBIT 2

ANNUAL DROPOUT RATES BY RACIAL/ETHNIC GROUP 1977-1978 THROUGH 1988-1989 (GRADES 9-12 ONLY)

Description of the Analysis

Annual rate data for the four largest racial/ethnic groups are shown separately for the past eleven school years. (The systemwide data, which include the Native American students, are not shown here in order to make the graph easier to read. However, the systemwide data, which include the small number of Native American students, may be seen in Exhibit 1.)

Table A-1 shows the complete data on which this analysis is based, including the figures for Native Americans shown separately as well as the systemwide data.

Findings

In the last five years, the groups show similar patterns - reaching a peak in 1984-1985 and then declining thereafter. The exception is Asian students, whose dropout rate has declined from 1983-1984 on. Over time, Hispanic students have had the highest dropout rate and Asian students the lowest. The dropout rates of Black and White students have been between the two extremes and close to each other. In 9 of the 12 years, the dropout rate for Black students has been slightly lower than that of Whites.

EXHIBIT 2
ANNUAL DROPOUT RATES BY RACIAL/ETHNIC GROUP
1977-1978 THROUGH 1988-1989 (GRADES 9-12 ONLY)

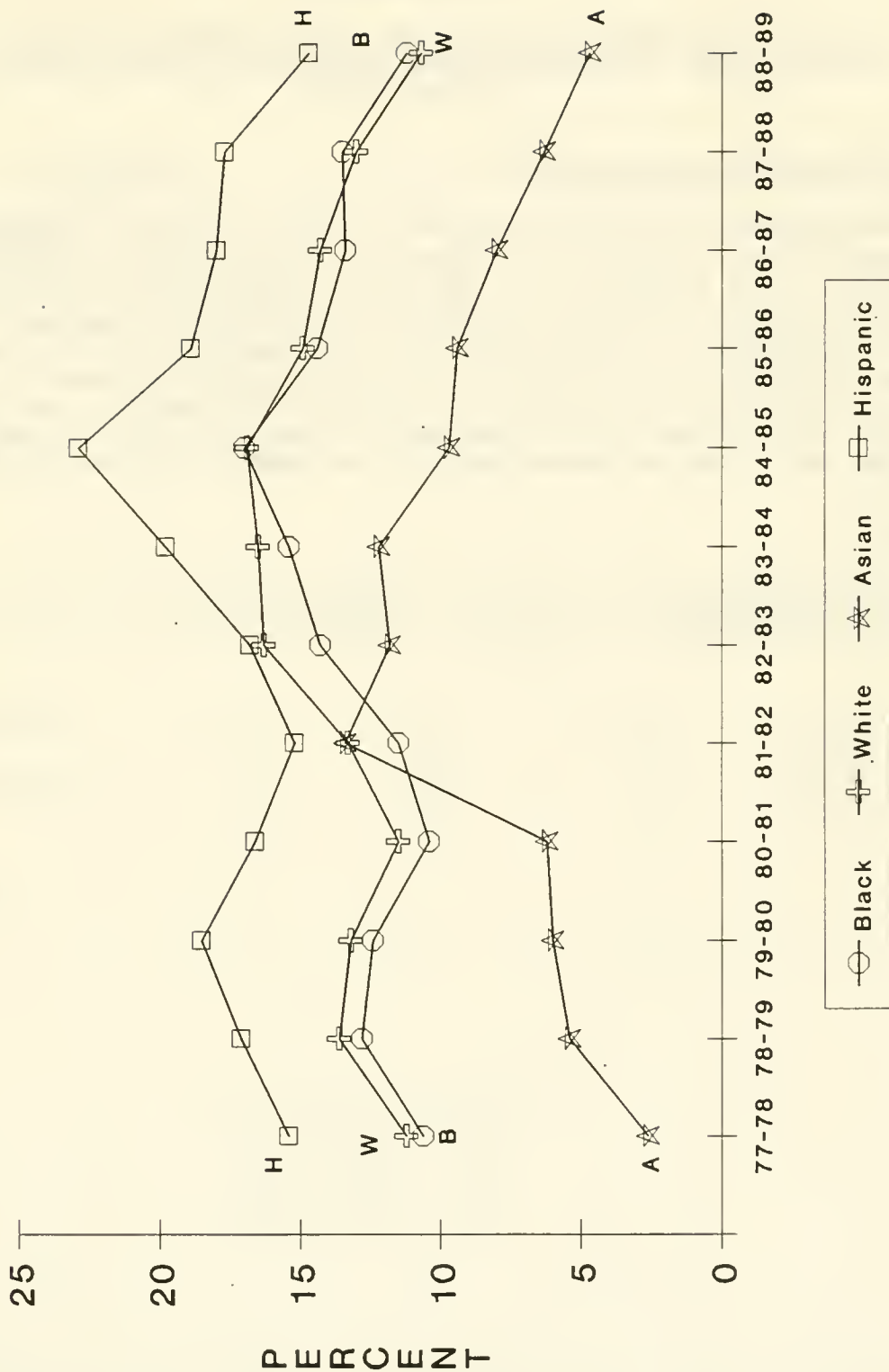


EXHIBIT 3

ANNUAL RATES OF DROPOUT FOR 1986-1987 THROUGH 1988-1989 GRADES 6-8

Description of the Analysis

It is expected that these dropout rates for grades 6-8 will be extremely low. The reason is that a student must be 16 years old in order to be able to drop out legally (younger nonattenders are legally truant), and few middle school students are 16. However, it is important to account for all students who drop out, and those students who are over 16 in middle school known to be a high risk group. To preserve comparability both to BPS data and to data from other school systems, dropout in this group is counted and reported separately from that in grades 9-12.

Findings

In this exhibit, data for the three most recent years are shown. The total dropout rate for both 1986-1987 and 1987-1988 was 1.2%. In 1988-1989 the rate declined, reaching 0.9%.

EXHIBIT 3

ANNUAL RATES OF DROPOUT FOR 1986-1987 THROUGH 1988-1989 GRADES 6-8

1988-1989

Stay in School		
or Graduate	11509	97.6%
Dropout	83	0.7%
Probable Dropout	21	0.2%
Other Loss	183	1.6%
	<hr/>	<hr/>
Total in the		
Analysis	11796***	100.0%

1986-1987

1987-1988

Stay in School				
or Graduate	11572	97.2%	11599	97.3%
Dropout	124	1.0%	122	1.0%
Probable Dropout	23	0.2%	20	0.2%
Other Loss	190	1.6%	184	1.5%
	<hr/>	<hr/>	<hr/>	<hr/>
Total in the				
Analysis	11909*	100.0%	11925**	100.0%

TOTAL DROPOUT RATES

1988-1989: 0.9%
1987-1988: 1.2%
1986-1987: 1.2%

- * An additional 1244 students transferred out of BPS in 1986-1987.
- ** An additional 1343 students transferred out of BPS in 1987-1988.
- *** An additional 1346 students transferred out of BPS in 1988-1989.

EXHIBIT 4

ANNUAL DROPOUT BY GRADE AND AGE STATUS (GRADES 6-12, 1988-1989)

Description of the Analysis

This exhibit shows dropout data separately for 6th through 12th graders. Since the overall data by grade obscure the relationship of dropout to age, and especially of dropout and being overaged for one's grade, the second two columns of the exhibit disentangle the age and grade relationship. "Overaged" is defined as being two or more years over the minimum age for one's grade as of September 1. The cutoff September 1 ages are shown below:

CRITERION FOR BEING OVERAGED IN GRADE

<u>GRADE</u>	<u>AGE AS OF SEPTEMBER 1: STUDENT IS AT LEAST...</u>
6	13.0
7	14.0
8	15.0
9	16.0
10	17.0
11	18.0
12	19.0

If a student is over a given cutoff age, s/he should be at least one year older than classmates who have entered at the right time and made normal progress.

Findings

Almost all of the dropout rates shown in this analysis are lower than the comparable rates in 1987-1988. Overall rates (first column of the table) are very low until 9th grade, with a peak in 10th grade. Students who remain in school until 12th grade are substantially less likely to drop out than are other high school students in the earlier grades.

Clearly, students whose failures in school have caused them to be at least two years over minimum age are at a very high risk of dropping out. Almost one fifth of the overaged 8th graders dropped out; these students do not even attempt high school. The highest dropout rate is for overaged 9th graders (who have turned 16 by the beginning of the school year), but the 10th grade rate is not much lower. These data reinforce the conclusion that school failure leading to dropout often precedes the high school years.

By contrast, students who are at their appropriate age/grade level (or who may be off by only one year) have a much lower dropout rate. Tenth grade is the highest risk year for these students.

EXHIBIT 4

ANNUAL DROPOUT BY GRADE AND AGE STATUS (GRADES 6-12, 1988-1989)

GRADE	OVERALL*		NOT 2 YEARS OVERAGED**		OVERAGED	
	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER
6th	0.1%	(4/3786)	0%	(0/3490)	1.4%	(4/295)
7th	0.6%	(26/4162)	0%	(0/3802)	7.2%	(26/360)
8th	1.9%	(74/3848)	0%	(0/3438)	18.1%	(74/409)
9th	12.4%	(641/5170)	4.0%	(155/3851)	36.9%	(486/1316)
10th	13.2%	(556/4198)	6.8%	(217/3189)	33.7%	(337/1000)
11th	10.5%	(395/3763)	5.9%	(170/2882)	25.5%	(222/870)
12th	6.8%	(238/3504)	5.0%	(143/2868)	14.8%	(89/600)

* Students who transferred out of BPS are not included in the population. For the analysis which separated students by age status, there were 61 cases of missing age data (across all grades). Therefore the number of overaged plus not overaged students does not always add up exactly to the overall number.

** Note that the cutoff ages for classification as "overaged" are as of the beginning of the school year. It is possible that a 9th grade student, for instance, could be 15.8 years old as of 9/1 (probably because of having been retained in grade once); s/he would not be classified as "overaged". However, the student could drop out shortly after turning 16 in November.

EXHIBITS 5A AND 5B

ANNUAL DROPOUT BY RACIAL/ETHNIC GROUP AND GENDER REGULAR EDUCATION ONLY WITH AND WITHOUT EXAMINATION SCHOOLS (GRADES 9-12, 1988-1989)

Description of the Analysis

These comparisons are intended to examine separately the relationships of racial/ethnic group and gender with dropout. Only Regular Education students are included in the analysis so that the comparisons may be more precise. (For example, there are more male than female students in Special Education.) The first part of the table (Exhibit 5A) shows the results for all Regular Education students, while the bottom half (Exhibit 5B) shows the same analysis but with the examination school students eliminated from the population. Exhibit 5B (without exam school students) is intended to provide a comparison of "average" students by racial/ethnic group and gender.

Findings

All dropout rates shown are lower than they were in 1987-1988. In both analyses (with and without the exam school students), it is clear that female students are less likely to drop out than male students are. The only apparent exception is Native American students, but their numbers are so few that percentages are strongly affected by only a few students, and therefore the percentages are not shown in the separate analyses for males and females. It should be noted that the gender differences are least pronounced for Whites and most pronounced for Asians.

The overall differences by racial/ethnic group indicated in Exhibit 5A are consistent with those of other analyses. Hispanic and Native American students have high dropout rates, while the dropout rate for Asian students is quite low and Black and White students are in between. These relative relationships are preserved when the groups are separated by gender.

Changing the comparison to include only those in Regular Education who were not in exam schools has several effects. First, as would be expected, all the dropout rates are higher. However, the differences across racial/ethnic groups are substantially reduced. The rate for Asian students is now only slightly below that for Black students, and the rate for Whites is also substantially increased; the dropout rate for Whites becomes higher than that of Blacks. The reason for these changes is that there are proportionally more Asians and Whites among examination school students (all of whom drop out at a very low rate). Differences by gender remain relatively stable.

EXHIBIT 5A

ANNUAL DROPOUT BY RACIAL/ETHNIC GROUP AND GENDER REGULAR EDUCATION ONLY (GRADES 9-12, 1988-1989)

	<u>OVERALL DROP%/NUMBER</u>	<u>MALE DROP%/NUMBER</u>	<u>FEMALE DROP%/NUMBER</u>
Black	10.4% (606/5855)	12.3% (324/2641)	8.8% (282/3214)
White	9.6% (293/3056)	10.3% (159/1537)	8.8% (134/1519)
Asian	4.5% (46/1032)	5.6% (30/535)	3.2% (16/497)
Hispanic	13.7% (222/1621)	15.1% (113/747)	12.5% (109/874)
Native Amer.*	11.9% (7/59)	* (3/31)	* (4/28)
TOTAL	10.1% (1174/11623)	11.5% (629/5491)	8.9% (545/6132)

EXHIBIT 5B

ANNUAL DROPOUT BY RACIAL/ETHNIC GROUP AND GENDER REGULAR EDUCATION ONLY EXAMINATION SCHOOLS ELIMINATED (GRADES 9-12, 1988-1989)

	<u>OVERALL DROP%/NUMBER</u>	<u>MALE DROP%/NUMBER</u>	<u>FEMALE DROP%/NUMBER</u>
Black	12.1% (586/4841)	13.9% (311/2231)	10.5% (275/2610)
White	14.7% (287/1958)	15.3% (156/1019)	14.0% (131/939)
Asian	11.2% (40/357)	14.2% (29/204)	7.2% (11/153)
Hispanic	15.7% (220/1399)	17.5% (113/645)	14.2% (107/754)
Native Amer.*	14.6% (7/48)	* (3/24)	* (4/24)
TOTAL	13.3% (1140/8603)	14.8% (612/4123)	11.8% (528/4480)

* The number of Native Americans is too small to permit reliable comparisons of percentages for males and females separately.

EXHIBIT 6

ANNUAL DROPOUT BY SCHOOL, GRADES 9-12, 1988-1989

Description of the Analysis

Students who transferred during the year within BPS are counted with the last school to which they were assigned. This method generally provides an accurate picture of students' decisions. However, it may slightly underestimate dropout from schools such as the examination schools which students can leave but not transfer into during the year.

As is the case for other analyses, students who transferred from BPS to another school system are not included in the analysis.

Two calculations of the dropout rate for high schools were performed. In one (the first two columns), only students in Regular Education (neither Special Needs nor Bilingual) were counted. The reason for this is that schools have widely differing proportions of Special Needs and Bilingual students, and this difference could affect the comparison across schools (Special Needs status, in particular, is a risk factor for dropout). Because Regular Education provides the clearest comparison, the groupings discussed below will be based on the Regular Education dropout rates.

Findings

For most schools, the dropout percentages are relatively similar in the two different analyses. Overall, schools may be grouped into "lowest", "middle," and "highest" dropout rate categories based on the Regular Education dropout rates. The "lowest" category (0.1% to 6.3%) includes the three examination schools (Boston Latin, Boston Latin Academy, and Boston Technical), Snowden (Copley Square), Umana, and one district high school, Hyde Park. The "middle" category (9.3% to 11.2%) includes English, Madison Park, and two district schools, East Boston, and West Roxbury. The "highest" category (14.3% to 24.8%) includes one citywide school, Boston High, and six district schools, South Boston, Burke, Charlestown, Dorchester, Brighton, and Jamaica Plain.

The dropout rates for the two substantially separate Special Needs schools differ from each other. The dropout rate for the Horace Mann School for the hearing impaired is quite low, while the rate for the McKinley, a school for students with behavioral problems likely to be associated with dropout, is quite high.

It should be noted that most of the schools, even those in the "highest" category, had a lower dropout rate in 1988-1989 than in 1987-1988.

EXHIBIT 6

ANNUAL DROPOUT BY SCHOOL GRADES 9-12, 1988-1989

<u>SCHOOL</u>	<u>REGULAR EDUCATION</u>		<u>ALL STUDENTS</u>	
	<u>DROPOUT %</u>	<u>NUMBER</u>	<u>DROPOUT %</u>	<u>NUMBER</u>
<u>District A</u>				
Brighton	20.8%	(91/437)	18.5%	(167/905)
Jamaica Plain	24.8%	(156/630)	23.0%	(222/967)
<u>District B</u>				
Hyde Park	6.3%	(36/573)	6.1%	(46/750)
West Roxbury	11.2%	(104/930)	11.7%	(138/1180)
<u>District C</u>				
Burke	17.5%	(102/582)	17.7%	(136/770)
Dorchester	18.4%	(84/457)	18.5%	(139/750)
South Boston	15.3%	(107/700)	15.5%	(155/1001)
<u>District D</u>				
Charlestown	17.6%	(82/466)	11.1%	(111/1001)
East Boston	10.9%	(71/651)	10.4%	(85/815)
<u>District E</u>				
Boston High	14.3%	(75/525)	14.7%	(118/801)
Boston Tech.	3.2%	(28/880)	3.2%	(30/948)
English	9.3%	(78/841)	8.8%	(134/1524)
Latin Academy	0.5%	(4/800)	0.5%	(4/825)
Latin School	0.1%	(2/1359)	0.1%	(2/1359)
Madison Park	10.5%	(107/1019)	11.7%	(211/1808)
Snowden/Copley	4.5%	(18/403)	5.2%	(25/481)
Umana	4.3%	(16/376)	5.4%	(25/459)
<u>Special Needs</u>				
Horace Mann	--	--	2.7%	(1/37)
McKinley	--	--	27.3%	(65/238)
TOTAL	10.0%	(1161/11629)	10.9%*	(1814/16619)*

* Note: There were an additional 16 students (13 in Regular Education) who received an indeterminate assignment because of previous nonattendance. Of these, all are counted as dropouts in the systemwide data because they were over 16 and did not apply for reassignment.

EXHIBIT 7

ANNUAL DROPOUT BY SCHOOL, GRADES 6-8, 1988-1989

Description of the Analysis

The results for the schools attended by 6th through 8th graders are presented in less detail than those for high schools because overall the incidence of dropout is very low for these students (the majority of whom are under 16). Therefore, breaking down the figures by programmatic status (Regular Education compared to all students) would add nothing to the analysis.

Findings

The number of dropouts per school ranged from zero through 11. Since the number of dropouts is so low, it is not appropriate to make comparative statements about the different schools. For the same reason it is difficult to make year-to-year comparisons of the dropout rates for middle schools.

EXHIBIT 7

ANNUAL DROPOUT BY SCHOOL
GRADES 6-8, 1988-1989

<u>DISTRICT</u>	<u>SCHOOL</u>	<u>ALL STUDENTS</u>	
		<u>DROPOUT %</u>	<u>NUMBER</u>
DIST. A	M. Curley	0.3%	(2/758)
	Edison	0.5%	(3/604)
	Lewis	0.4%	(1/279)
	Taft	1.0%	(4/403)
	Tobin (gr. 6-8)	0.0%	(0/77)
DIST. B	Irving	1.0%	(6/619)
	Lewenberg	0.8%	(4/485)
	Rogers	0.0%	(0/497)
	R.G. Shaw	0.7%	(2/294)
	Thompson	0.9%	(3/339)
DIST. C	Cleveland	0.8%	(7/920)
	Dearborn	1.1%	(4/368)
	Gavin	0.9%	(4/458)
	Holmes	0.8%	(2/263)
	McCormack	1.4%	(8/590)
	Wilson	1.9%	(10/540)
DIST. D	Barnes	1.0%	(6/619)
	Edwards	2.2%	(11/489)
	Timilty	0.9%	(4/439)
DIST. E	King	2.3%	(9/396)
	Latin Academy (gr. 7 & 8)	0.2%	(1/403)
	Latin School (gr. 7 & 8)	0.0%	(0/801)
	Mackey	0.0%	(0/379)
	McKay (gr. 6)	0.0%	(0/74)
	Umana (gr. 7 & 8)	0.7%	(2/277)
	Wheatley	0.0%	(0/305)
SPECIAL	Horace Mann (gr. 6-8)	0.0%	(0/14)
	McKinley (gr. 6-8)	1.2%	(1/84)
TOTAL		0.8%*	(94/11774)*

*An additional 22 students received an indeterminate assignment which was never changed. Of those, 10 were over 16 and classified as drop-outs in the systemwide data.

EXHIBIT 8

ANNUAL DROPOUT BY SPECIAL NEEDS PROTOTYPE (GRADES 6-8 AND GRADES 9-12, 1988-1989)

Description of the Analysis

In this exhibit, the purpose is to compare the relationship of Special Needs status and the likelihood of dropping out. To be precise, the analysis should compare Special Needs students with others who differ in as few other ways as possible. To accomplish this goal, several groups have been eliminated from the analysis: students attending examination schools, students attending substantially separate BPS schools (McKinley and Horace Mann), and Bilingual Program students. Bilingual Program students are eliminated because the proportion of Special Needs students among them is substantially lower than the proportion among non-Bilingual students. Students attending exam schools are eliminated because those schools have a much lower proportion of students in Special Needs categories than do the other high schools. These selections provide the most precise comparison between Regular Education students and Special Needs students, in schools where both categories of students are in attendance in representative numbers.

The mainstreamed prototypes (.1 to .3) reflect increasing proportions of time spent in receiving Special Needs services (.1 students are served by modifications within their regular classroom; .2 students spend up to 25% of their time and .3 students 25-60% of their time outside their regular classrooms). Students with a .4 prototype attend a "substantially separate" program.

Findings

Though the incidence of dropout among students in grades 6-8 is low overall, the dropout rate is higher among students in Special Needs than it is among Regular Education pupils. The highest dropout rate is among students in the most severely handicapped mainstream prototype (.3), though the rate for the .2 students is essentially the same. A possible explanation is that these students are more likely than others to have experienced school failure and therefore to be overaged enough to be able to drop out. On the other hand, for the .4 (substantially separate) students who are not mainstreamed at all there may be less stigma attached to being overaged for one's grade. Finally, .4 students may well have Individual Educational Plans which do not hold them to meeting the ordinary promotion standards.

A similar pattern occurs in the data for grades 9-12. While students in all four prototypes drop out more than the Regular Education students do, the rate is highest among the students with a .3 prototype. The dropout rates are lower overall than they were in the 1987-1988 data.

EXHIBIT 8

ANNUAL DROPOUT BY SPECIAL NEEDS PROTOTYPE (GRADES 6-8 AND GRADES 9-12, 1988-1989)

	<u>GRADES 6-8</u>		<u>GRADES 9-12</u>	
	DROPOUT		DROPOUT	
	<u>PERCENT</u>	<u>NUMBER</u>	<u>PERCENT</u>	<u>NUMBER</u>
REGULAR EDUCATION	0.9%	55/6330	13.1%	(1127/8590)
SPECIAL EDUCATION*				
Prototype .1	0.0%	0/223	15.8%	(35/222)
Prototype .2	2.1%	17/795	15.2%	(133/875)
Prototype .3	2.2%	14/629	15.8%	(101/641)
Prototype .4	0.6%	5/886	14.7%	(110/748)
SPECIAL EDUCATION	1.4%	(36/2533)**	15.2%	(379/2486)***
TOTAL				

* "Mainstream" prototypes are .1, .2, and .3 (assigned to a Regular Education classroom but receiving services, usually outside the Regular classroom); Prototype .4 is substantially separate.

** An additional 9 6th through 8th grade students were awaiting placement in Special Needs. None of these students dropped out.

*** An additional 6 9th through 12th grade students were awaiting placement in Special Needs; none dropped out.

Note: The following groups are not included in this analysis: exam school students, those attending substantially separate BPS schools (McKinley, Horace Mann), and Bilingual Program students.

EXHIBIT 9

ANNUAL DROPOUT BY BILINGUAL PROGRAM STATUS AND FIRST LANGUAGE (GRADES 9-12, 1988-1989)

Description of the Analysis

This analysis represents an attempt to ascertain whether being in a Bilingual Program is associated with a higher or lower dropout rate, with other factors known to be related to dropout controlled. For this reason, the comparison is made between students in Bilingual Education or Regular Education only (no Special Needs students in either group), only for students in schools which have Bilingual Education programs. This excludes students in the examination schools (who are very unlikely to drop out), so that students attending district high schools in Bilingual programs are not compared to a non-Bilingual group which by definition contains all the exam school students.

The analysis was performed separately for each of the major first language groups (other than English, of course). Data are shown for a language group separately only if there were at least 100 students total in the language group. This number was chosen as a minimum because the language groups are subdivided further (into Bilingual vs. non-Bilingual) for the analysis and percentages become less meaningful for comparisons when the numbers on which they are based are small.

All of the language groups which were not large enough to be presented separately have been combined and are shown as "All Others" in the table.

Findings

The dropout rate among Bilingual Program students is lower than that for Regular Education students for the Chinese, Haitian, and Vietnamese language groups, as well as for "All Others" and the total comparison. The reverse is true for the French, Cape Verdean, and Spanish language groups. However, a number of factors need to be considered before final conclusions are drawn. For example, within a language group Bilingual and Regular Education students could differ by length of time in the U.S., level of English proficiency, etc. Furthermore, the numbers involved in the comparisons are relatively small for several groups.

With only one exception (Chinese speaking students not in Bilingual), the dropout rates shown are lower than they were in 1987-1988.

EXHIBIT 9

ANNUAL DROPOUT BY BILINGUAL PROGRAM STATUS AND FIRST LANGUAGE
(GRADES 9-12, 1988-1989)

	PROGRAM STATUS				TOTAL IN ANALYSIS
	BILINGUAL DROPOUT PERCENT	NUMBER	REGULAR EDUCATION DROPOUT PERCENT	NUMBER	
FIRST LANGUAGE*					
Chinese	0.9%	(2/217)	12.8%	(10/78)	295
French	8.9%	(14/158)	5.4%	(5/93)	251
Haitian	4.3%	(10/231)	4.5%	(4/88)	319
Cape Verdean	10.0%	(23/230)	6.4%	(7/109)	339
Spanish	14.6%	(94/645)	13.6%	(127/936)	1581
Vietnamese	10.7%	(19/177)	11.8%	(9/76)	253
All Others** (non-English)	5.9%	(9/152)	11.3%	(17/151)	303
TOTAL	9.4%	(171/1810)	11.7%	(179/1531)	3341

* A first language group is shown separately only if there were at 100 students in that group. The analysis includes Bilingual Program and Regular Education students (no Special Needs students) attending schools which had students in Bilingual programs. (Therefore, the examination schools are not included.)

** Includes Arabic, Burmese, Cambodian, Greek, Italian, Laotian, Mandarin, Portuguese, Korean, and Toishanese, among others.

EXHIBIT 10

ANNUAL DROPOUT BY VOCATIONAL EDUCATION STATUS (GRADES 9-12, 1988-1989)

Description of the Analysis

Students pursuing Vocational Education programs are compared to other Regular Education students who are not enrolled in Vocational programs. Therefore, Special Needs and Bilingual students are excluded from the analysis. The comparison is further restricted to students attending schools which enroll Vocational Education students (thus eliminating the exam schools).

Findings

The data indicate that Vocational students are less likely to drop out than are Regular Education students who are attending the same schools. The dropout rates for both Vocational and Regular Education students are lower than they were in 1987-1988.

VOCATIONAL EDUCATION* DROPOUT		REGULAR EDUCATION DROPOUT	
<u>PERCENT</u>	<u>NUMBER</u>	<u>PERCENT</u>	<u>NUMBER</u>
11.4%	(135/1188)	13.9%	(974/6999)

* This analysis excludes Bilingual and Special Needs students and is restricted to students attending schools which have students in Vocational Education (exam school students are excluded).

ANALYSES OF COHORT DROPOUT RATE DATA

In this section, analyses of cohort dropout rates are presented. Students who start 9th grade together in a given year are followed up in BPS data for five years. (Five years are included rather than four so that students who are retained in grade once during high school can be followed until they would be expected to graduate.) Each student is assigned one final outcome - drop out, leave for some other reason, graduate, or remain in school - though of course some of these events, such as dropping out, occur before the five year period is complete.

Cohorts are identified according to the beginning of the school year in which the students started 9th grade. For example, first time 9th grade students in the 1982-1983 school year are in the 1982 cohort. The 1982 9th graders were expected to graduate in June of 1986, but they were followed up through June of 1987.

Exhibit 11 shows systemwide data for cohorts beginning 9th grade from 1979 through 1984, while Exhibit 12 shows cohort dropout rates historically by racial/ethnic group. The next exhibit provides a breakdown by school. Finally, there are comparisons across educational programs: Regular Education (by racial/ethnic group and gender, both including and excluding the exam schools); Special Education; Bilingual; and Vocational Education.

Criteria for Inclusion in Cohort Rate Data

In general, the criteria are similar to those for annual rate data. Students who attend private Special Needs schools are excluded, as are the rare instances of those who are discharged with an "error" withdrawal code during the 9th grade year. Students who transfer out of BPS (and do not return) are excluded from the cohort population.

In order to be included in a 9th grade cohort, a student must attend at least one day of 9th grade - i.e., attempt 9th grade. In addition, only students eligible in 9th grade for the first time are included. This procedure was instituted to avoid the serious inflation of cohort dropout rates which occurs when students who repeat 9th grade (who are much more likely than others to drop out) were counted in more than one cohort.

Once a cohort is defined, nobody is added. For example, the 1984 9th grade cohort has students expected to graduate in 1988. However, students who entered later (in 10th, 11th, or 12th grades, with an expected graduation date of 1988) were not added to the cohort. The only students deleted from the cohort are those who eventually transferred out of BPS to another school system. See the **Technical Appendix** for further details on sample selection.

EXHIBIT 11

9TH GRADE COHORT DROPOUT RATES SYSTEMWIDE

Description of the Analysis

This chart shows the overall cohort dropout rates for the last six cohorts for which data are available.

Findings

After several years of increasing, the cohort dropout rate stabilized with the 1983/1987 cohort. The 1984/1988 cohort shows a substantial decline in the dropout rate for the first time since BPS began reporting cohort rates.

The details of the outcomes for the 1984/1988 cohort are shown below:

	<u>Percent</u>	<u>Number</u>
Still in School (13th Year)	9.9%	408
Dropout	33.3%	1369
Probable Dropout	3.9%	160
Graduate on Time	47.2%	1941
Other Graduation*	4.7%	195
Other Loss**	<u>0.9%</u>	<u>35</u>
TOTAL	100.0%	4108***

Total Cohort Dropout Rate: 37.2%

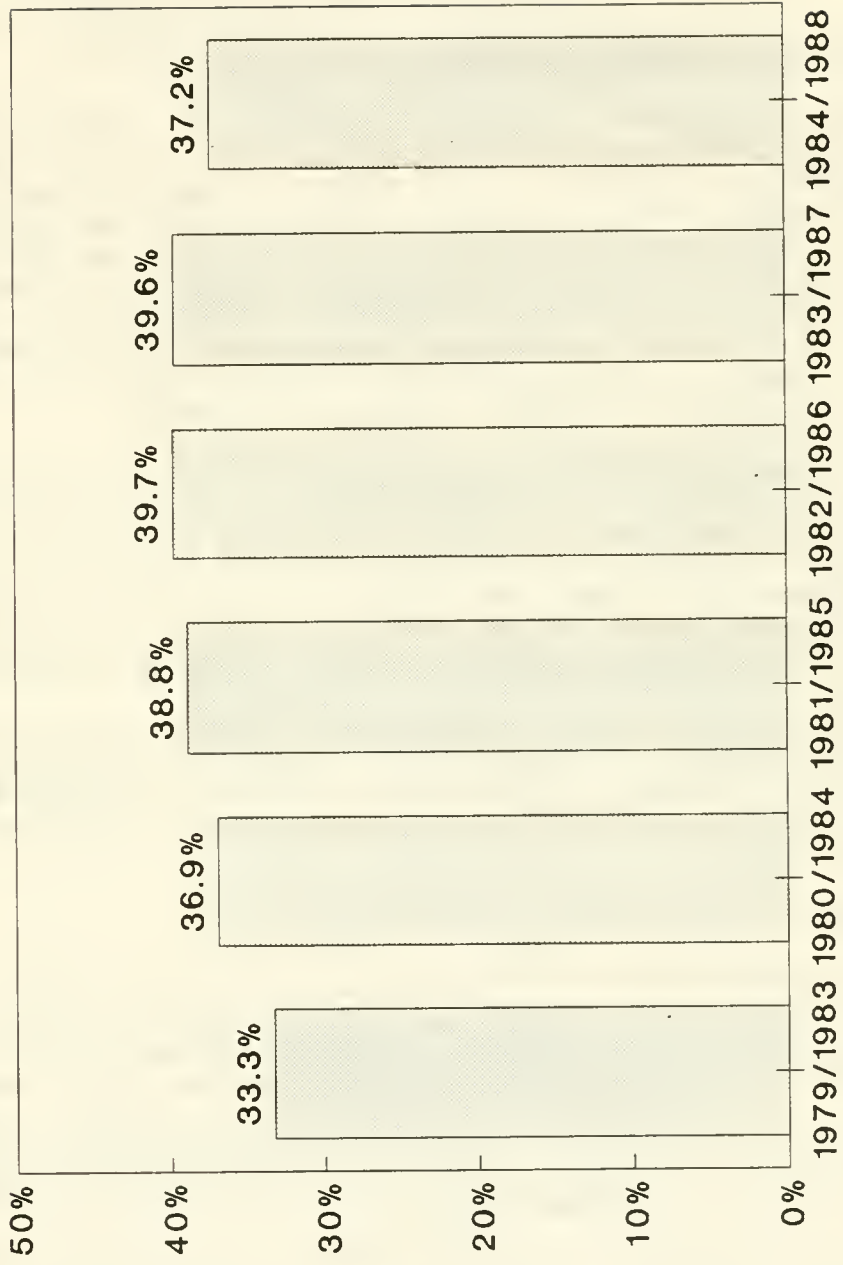
* For example, end of summer graduates or students who accelerated.

** This category includes students who died, were expelled, or had a 99 ("error") discharge code after the first year. It also includes students lost to the analysis.

*** An additional 799 students transferred out of BPS.

EXHIBIT 11

9th Grade Cohort Dropout Rates Systemwide Excluding Students Who Transfer To Other School Systems



9th Grade Cohort/Expected Year of Graduation

EXHIBIT 12

DROPOUT BY RACIAL/ETHNIC GROUP AND SYSTEMWIDE: 9TH GRADE COHORTS OF 1979 THROUGH 1984 (EXPECTED GRADUATION 1983 THROUGH 1988) TRANSFERS FROM BPS EXCLUDED

Description of the Analysis

The chart provides a detailed picture of changes over time in the cohort dropout rate separately for each of the four largest racial/ethnic groups. (The number of Native American students in the cohorts is too small to permit meaningful comparisons across time.) Data for the system as a whole are omitted in order to make the chart easily readable, but they are presented in the table and in the previous exhibit. The overall number of students in a cohort has ranged from 4614 (1979 cohort) down to 3988 (1983 cohort). Table A-2 (in the Data Appendix) shows the complete data on which this analysis is based.

The dropout rate for a given group is derived by dividing the number of dropouts in that group in the cohort by the total population of that group in the cohort and multiplying by 100. For instance, in the 1979 9th grade cohort Table A-2 indicates that there were 2179 Black students. Of these, 720 dropped out sometime between 1979 and the final follow-up year, giving the Black 1979 cohort dropout rate of 33.0% which is shown in the chart.

In reading the chart, comparisons of the cohort dropout rates across different racial/ethnic groups in a particular cohort may be made by reading "up and down," while comparison of cohort dropout rates for different years may be made by reading "left-to-right."

Findings

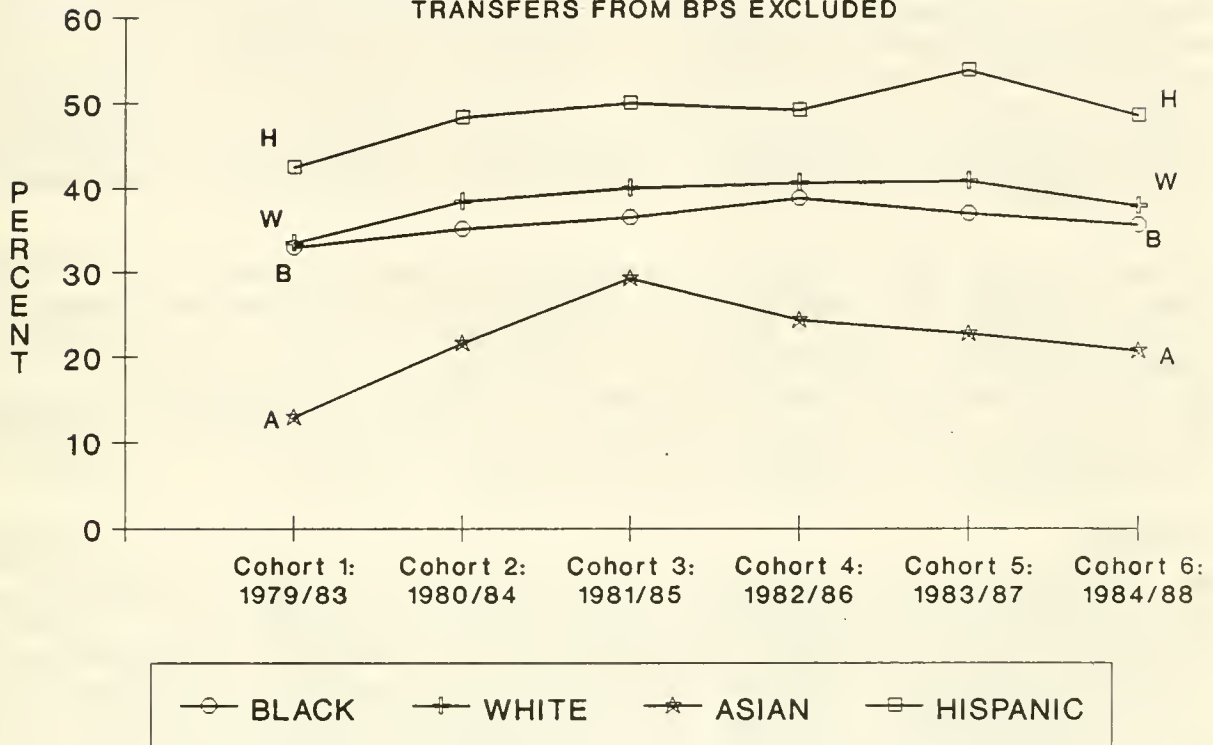
The systemwide data show several years of increase followed by a stabilization and then the first substantial decrease in the most recent cohort. Reductions in annual dropout rates (Exhibit 1) are apparently beginning to be reflected in the cohort data.

All four racial/ethnic groups showed declines in the 1984/1988 cohort year; the rate of decline was slightly higher for Hispanics than for the other groups.

For all six cohorts the dropout rate for Blacks has been lower than that of Whites, though the two groups are fairly similar. The rate for Asians has consistently been much lower than for others, and the rate for Hispanics has consistently been the highest. The number of Native American students is too small to permit reliable comparisons over time. (Their data are shown in Table A-2, in the Data Appendix).

EXHIBIT 12

**DROPOUT BY RACIAL/ETHNIC GROUP AND SYSTEMWIDE:
9TH GRADE COHORT OF 1979 THROUGH 1984
(EXPECTED GRADUATION 1983 THROUGH 1988)
TRANSFERS FROM BPS EXCLUDED**



	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Black	33.0%	35.2%	36.5%	38.8%	37.0%	35.6%
White	33.5%	38.4%	40.0%	40.6%	40.8%	37.9%
Asian	12.9%	21.6%	29.3%	24.3%	22.7%	20.7%
Hispanic	42.5%	48.3%	49.9%	49.1%	53.8%	48.5%
System	33.3%	36.9%	38.8%	39.7%	39.6%	37.2%

The expected years of graduation for the six cohorts were 1983, 1984, 1985, 1986, 1987, and 1988 respectively.

EXHIBIT 13

1984 COHORT DROPOUT BY SCHOOL

Description of the Analysis

Over the course of a high school career, many students transfer from one BPS school to another, for widely varying reasons. It would be difficult to decide how to choose a school to which to attribute a student's outcome status when that student has attended more than one school, since the reasons for and the timing of transfers are so varied. For this reason, the comparison across schools is restricted to students whose first school and last school were the same. Students who transferred within BPS are considered separately.

Since schools vary in the proportion of Special Needs and Bilingual students they enroll, the cohort dropout rates are shown separately for Regular Education students as well as for all students combined. The student's status as of the 9th grade year is the criterion for identifying Regular Education students. Since the clearest comparison is between students in Regular Education, groupings will be based on those dropout rates.

Findings

The "lowest" cohort dropout rate category for Regular Education students includes the examination schools (0.9% through 11.7%) plus two citywide schools (Snowden and Umana) and two district schools, Hyde Park and West Roxbury (ranging from 20.8% to 27.6%). A "middle" group, with rates ranging from 36.6% to 41.5%, includes Charlestown, Burke and East Boston, as well as three citywide schools, Boston High, English and Madison Park. The schools in the "highest" dropout rate category (48.1% to 56.1%) are Dorchester, South Boston, Brighton, and Jamaica Plain. Among students in the separate Special Needs schools, the high dropout rate for students at the McKinley schools is not unexpected since the school serves students with behavior problems. The number of students in the Horace Mann School for hearing-impaired students is too small to permit meaningful comparisons.

The group of students who moved from one BPS school to another at least once, almost 50% of whom dropped out (among those who were in Regular Education in the 9th grade), can clearly be included in the "highest" dropout category.

Because these analyses are based on relatively small numbers (near or under 100 for about half the schools), percentages are subject to fluctuation caused by differing outcomes for small numbers of students. Nonetheless, several schools' rates showed fairly substantial changes (more than 10 percentage points) from the 1983 cohort. There were substantial increases for Brighton and Jamaica Plain and decreases for Hyde Park, Burke, and Boston High.

EXHIBIT 13

1984 9TH GRADE COHORT DROPOUT BY SCHOOL*

<u>SCHOOL</u>	<u>REGULAR EDUCATION</u>		<u>ALL STUDENTS</u>	
	<u>DROPOUT %</u>	<u>NUMBER</u>	<u>DROPOUT %</u>	<u>NUMBER</u>
<u>District A</u>				
Brighton	51.5%	(52/101)	54.0%	(87/161)
Jamaica Plain	56.1%	(46/82)	55.6%	(75/135)
<u>District B</u>				
Hyde Park	26.9%	(28/104)	27.0%	(37/137)
West Roxbury	27.6%	(45/163)	28.8%	(65/226)
<u>District C</u>				
Burke	38.5%	(30/78)	45.8%	(55/120)
Dorchester	48.1%	(50/104)	52.4%	(88/168)
South Boston	51.1%	(72/141)	52.4%	(120/229)
<u>District D</u>				
Charlestown	36.6%	(37/101)	34.3%	(71/207)
East Boston	38.5%	(50/130)	38.9%	(70/180)
<u>District E</u>				
Boston High	37.2%	(42/113)	42.9%	(67/156)
Boston Tech.	11.7%	(23/196)	11.9%	(24/202)
English	38.5%	(69/179)	39.9%	(133/333)
Latin Academy	3.8%	(7/186)	3.8%	(7/186)
Latin School	0.9%	(3/329)	0.9%	(3/329)
Madison Park	41.5%	(49/118)	44.8%	(103/230)
Snowden/Copley	20.8%	(16/77)	21.1%	(19/90)
Umana	23.7%	(18/76)	23.1%	(24/104)
<u>Special Needs</u>				
Horace Mann	--	--	22.2%	(2/9)
McKinley	--	--	68.5%	(37/54)
TOTAL (SAME SCHOOL)	28.0%	(637/2278)	33.4%	(1087/3256)
WITHIN BPS TRANSFERS	49.0%	(276/563)	51.3%	(417/813)
OVERALL	32.1%	(913/2841)	37.0%*	(1504/4069*)

NOTE: Only students whose first and last schools were the same are attributed to a school.

* Thirty-nine students who were actually attending a private Special Needs School after 9th grade have been eliminated from this analysis. This is why the overall cohort rate differs slightly from that shown in Exhibit 11.

EXHIBITS 14A AND 14B

1984 COHORT DROPOUT: REGULAR EDUCATION RACIAL/ETHNIC GROUP BY GENDER (WITH AND WITHOUT EXAMINATION SCHOOLS)

Description of the Analysis

This exhibit addresses more than one question. First, it examines gender differences in cohort dropout within each racial/ethnic group. In order to make the comparisons clearer, it focuses on students in Regular Education only. (There are racial/ethnic group differences in participation in other programs. To cite one example, a higher proportion of Hispanic students than of other groups is in Bilingual Education). Finally, in order to compare "average" students (those who have not been specially selected for academic ability), the analysis is also shown with exam school students eliminated (Exhibit 14B).

Findings

As with the annual rate data, in all groups the cohort dropout rate was lower for females than for males. The size of the difference varied, however. There are relatively large differences for Blacks and Asians and (comparatively) small differences for White and Hispanic students.

In Exhibit 14A (all Regular Education students) the racial/ethnic differences show the usual overall pattern: Asian students have the lowest dropout rate and Hispanics the highest, with Black and White students in between. In this analysis, as in other cohort analyses (Exhibit 12), the overall dropout rate is lower for Blacks than it is for Whites. The breakdown by gender indicates that all of the difference between Blacks and Whites is due to a large difference between Black and White females; the dropout rate for Black males is actually higher than that for White males.

The analysis without the examination school students (Exhibit 14B) reduces the gender difference for Asian students but not for Blacks.

Without the examination school students the dropout rates are higher for all groups, especially Whites and Asians. The Asian cohort dropout rate is still substantially lower than that of other groups, but the rate for Whites is actually slightly higher than that for Hispanics and both rates are quite high.

EXHIBIT 14A

1984 COHORT DROPOUT: REGULAR EDUCATION RACIAL/ETHNIC GROUP BY GENDER

	<u>OVERALL DROP%/NUMBER</u>	<u>MALE DROP%/NUMBER</u>	<u>FEMALE DROP%/NUMBER</u>
Black	30.9% (424/1374)	37.5% (216/576)	26.1% (208/798)
White	34.2% (321/939)	34.9% (156/447)	33.5% (165/492)
Asian	13.8% (25/181)	17.9% (17/95)	9.3% (8/86)
Hispanic	42.1% (144/342)	43.6% (72/165)	40.7% (72/177)
Native Amer.	* (6/14)	* (2/5)	* (4/9)
TOTAL	32.3% (920/2850)	35.9% (463/1288)	29.3% (457/1562)

EXHIBIT 14B

1984 COHORT DROPOUT: REGULAR EDUCATION RACIAL/ETHNIC GROUP BY GENDER EXAMINATION SCHOOLS ELIMINATED

	<u>OVERALL DROP%/NUMBER</u>	<u>MALE DROP%/NUMBER</u>	<u>FEMALE DROP%/NUMBER</u>
Black	36.0% (388/1078)	42.9% (201/469)	30.7% (187/609)
White	51.0% (294/577)	52.0% (144/277)	50.0% (150/300)
Asian	28.3% (15/53)	28.1% (9/32)	28.6% (6/21)
Hispanic	48.7% (136/279)	50.4% (69/137)	47.2% (67/142)
Native Amer.	* (6/11)	* (2/4)	* (4/7)
TOTAL	42.0% (839/1998)	46.2% (425/919)	38.4% (414/1079)

* The number of Native Americans is too small to permit reliable comparison of percentages.

EXHIBIT 15

1984 COHORT DROPOUT: SPECIAL EDUCATION (BY PROTOTYPE)

Description of the Analysis

This exhibit shows a comparison of students with no Special Education prototype (i.e., Regular Education students) with those of Prototypes .1 through .4. The first three prototypes (.1 through .3) describe mainstreamed students who receive Special Needs services. The .1 designation indicates that the student's program is modified within the regular classroom; Prototypes .2 and .3 indicate that some part of their school day is spent receiving services outside the regular classroom (.3 represents the most time). The .4 prototype designates students who are not mainstreamed and participate in a "substantially separate" program.

In order to compare Special Needs students with students more likely to be comparable, Bilingual Program and examination school students as well as students in substantially separate schools (Horace Mann and McKinley Schools), have been excluded from this analysis. Special Needs or Regular Education status as of the 9th grade year is used as the basis of comparison.

Findings

The results indicate that students who have a Special Needs prototype are at higher risk of dropping out than others. This is especially true for students in the most severe but still mainstreamed category (Prototype .3). The dropout rates for Special Needs students are lower than they were in the 1983 cohort, while there is little difference for Regular Education.

	DROPOUT	
	<u>PERCENT</u>	<u>NUMBER</u>
REGULAR EDUCATION	42.0%	(839/1998)
SPECIAL EDUCATION*		
Prototype .1	51.4%	(36/70)
Prototype .2	46.6%	(132/283)
Prototype .3	56.0%	(98/175)
Prototype .4	50.0%	(88/176)
SPECIAL EDUCATION	50.3%	(354/704)
TOTAL		

* Mainstream prototypes are .1, .2, and .3; Prototype .4 is substantially separate.

Note: The following groups are not included in this analysis: exam school students, those attending substantially separate BPS schools (McKinley, Horace Mann), and Bilingual Program students.

EXHIBIT 16

1984 COHORT DROPOUT: BILINGUAL PROGRAM STATUS (ONLY STUDENTS WHOSE FIRST LANGUAGE WAS NOT ENGLISH)

Description of the Analysis

It is important to know whether or not participation in Bilingual Education programs is associated with a greater or lesser likelihood of dropping out for students whose first language is not English. Ideally, the comparison should be made for each language group separately, as was done in the bilingual analysis for the annual rate data. However, because of the much smaller numbers of students in the cohort analysis, it is not possible to separate the language groups and still compute meaningful percentages.

The student's Bilingual Program status as of 9th grade is used for the analysis.

Findings

The results shown below suggest that there is little difference between Bilingual and Regular Education students. This finding contrasts with the 1983 cohort, which showed a somewhat lower dropout rate for the Bilingual program participants. A separate analysis for students whose first language was Spanish, the single most numerous group, showed high dropout rates for both Bilingual Education (50.9% - 81 out of 159) and Regular Education (46.9% - 84 out of 179). This result parallels the annual rate finding for Spanish-speaking students, which also did not favor Bilingual participation. The finding for the cohort data may not be reliable because of the relatively small numbers involved in the comparison between groups in the cohort.

It should be noted that there are many factors which could differentiate students who participate in Bilingual Education from those who do not. In addition, this cohort analysis does not distinguish between students who leave the Bilingual Program during their high school careers and those who do not. Altogether, these findings should be interpreted cautiously.

BILINGUAL DROPOUT		REGULAR EDUCATION DROPOUT	
<u>PERCENT</u>	<u>NUMBER</u>	<u>PERCENT</u>	<u>NUMBER</u>
41.6%	(156/375)	40.0%	(106/265)

Note: This analysis excludes Special Needs and examination school students and compares students only in schools with Bilingual Programs.

EXHIBIT 17

1984 COHORT DROPOUT: VOCATIONAL EDUCATION STATUS

Description of the Analysis

In this analysis students in the cohort who were in Vocational Education in 9th grade are compared with other Regular Education students. Bilingual and Special Needs students are excluded, as are examination school students. In order to focus the comparison more precisely, only students attending those schools which have students in Vocational Education programs were included.

Findings

The data indicate that students who participated in Vocational Education Programs in 9th grade were less likely to drop out than were other Regular Education students attending the same schools. This finding parallels the results for the 1988-1989 annual rate data. The same pattern of results occurred for the 1983 cohort and the 1987-1988 annual rate data.

VOCATIONAL EDUCATION DROPOUT

<u>PERCENT</u>	<u>NUMBER</u>
----------------	---------------

38.9%	(203/522)
-------	-----------

REGULAR EDUCATION DROPOUT

<u>PERCENT</u>	<u>NUMBER</u>
----------------	---------------

44.2%	(610/1379)
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CONCLUSIONS AND IMPLICATIONS FOR FURTHER ANALYSIS

HISTORICAL TRENDS

Annual dropout rates have been declining now for several years, after peaking in 1984-1985. Cohort rates increased steadily from the 1979 9th grade cohort through the 1982 9th grade cohort. Then the rate stabilized (1983 cohort). Finally, for the 1984 cohort (expected to graduate in 1988), the rate decreased substantially.

Two factors may be working together to lower dropout rates. First, both programs and students may have adjusted to the more rigorous promotion standards which were introduced in 1983-1984. Second, this change may reflect the impact of dropout prevention programs.

DEMOGRAPHIC CHARACTERISTICS

1) Racial/Ethnic Group and Gender

Even with other factors controlled (by selecting Regular Education students only, or by eliminating examination school students), the dropout rate for males is almost always higher than the dropout rate for females. In general, the dropout rate for Blacks is slightly lower than that for Whites, though that is not true for the last two years of annual rates. In almost all comparisons Hispanic students as a whole have the highest dropout rates and Asian students the lowest. Hispanic students are generally at a substantially higher risk of dropping out than other students are, although Regular Education non-exam school White students are also at high risk.

When only students in Regular Education who were not attending exam schools are compared, racial/ethnic differences are reduced but not entirely eliminated. In the annual rate comparisons, Hispanic students remain the most likely to drop out, but the rate for Asians is about the same as that for Blacks (actually slightly higher when the comparison is restricted to males). The rate for White students is almost two percentage points higher than that for Blacks, most of the difference occurring among the female students.

Restriction of the comparison among Regular Education students to those attending non-exam schools has even more dramatic results for the cohort data. In contrast to the pattern when all Regular Education students are compared, the cohort dropout rate for White non-exam school students is higher than that for Hispanics, and the rate for Blacks is distinctly lower. Asian students remain the least likely to drop out.

These data provide a more differentiated picture of those who are at risk for dropout. Clearly, students who are selected for an examination school are unlikely to drop out. Racial/ethnic comparisons which do not differentiate between exam school students and other students have masked the extent of dropout for White and Asian students who are not in exam schools because the proportion of White and Asian students in exam schools is higher than it is in non-exam schools. Non-exam school White students in Regular Education are in fact at high risk of dropping out, especially over the long run (cohort rates).

2) Age in Relationship to Grade

Perhaps the single best predictor of dropout is being overaged for one's grade. Of course, being overaged typically reflects prior school failure and nonpromotion. That over 35% of 16 year old 9th graders dropped out in 1988-1989 suggests strongly that 9th grade is too late for dropout intervention efforts for many students. "Sample Section for Cohort Dropout Studies (in the Technical Appendix, below) shows an exceptionally high cohort dropout rate for students who were repeating 9th grade.

There are some who argue that retention in grade, with its stigmatizing effect, makes an independent contribution to dropout over and above that made by low academic skills. In this view, grade retention should be replaced with alternative, remedial programs. The data reported here do not allow for direct support or refutation of this argument, but they do suggest that closer examination of the impact of retention in grade is warranted.

3) School

Dropout rates in the three examination schools are very low. Results for district and citywide (magnet) schools are much more variable, and the differences may arise from a variety of factors. Some schools may draw students from more economically disadvantaged areas of the city. For some citywide schools, their emphasis may attract somewhat more academically oriented students (for instance, Snowden/Copley is a small school with a focus on international issues). The McKinley schools are a substantially separate program enrolling students whose behavioral problems make them likely candidates for dropout. In all schools - whether or not their dropout rates are high - aspects of their program, climate, and support services which tend to either increase or decrease the likelihood of dropout should be explored carefully in the context of their own dropout rate and the trends over time.

The table below shows a comparison of the approximate groupings of schools into "lowest," "middle," and "highest" dropout categories in both annual rate and cohort rate data. These classifications were made based on the 1984 9th grade cohort data and the

1988-1989 annual rate data, using Regular Education students as the basis of comparison.

CLASSIFICATION OF HIGH SCHOOL DROPOUT RATES
IN ANNUAL AND COHORT RATE ANALYSES

<u>COHORT RATES</u>			
	LOWEST 1%-28%	MIDDLE 37%-42%	HIGHEST 48%-56%
<u>ANNUAL RATES</u>			
LOWEST 0%-6%	Boston Latin Latin Academy Boston Technical Snowden/Copley Umana Hyde Park		
MIDDLE 9-11%	West Roxbury	Madison Park English East Boston	
HIGHEST 15-27%		Boston High Burke Charlestown	Dorchester South Boston Brighton Jamaica Plain

Thirteen of 17 schools fell into the same classification in both analyses. For the other four schools, there are some differences in classification (such as "highest" for the annual rate and "medium" for the annual rate, which is the classification for Charlestown), though the disagreement is never extreme (i.e., "highest" on one dropout rate and "lowest" on the other).

There are several possible sources for the differences in grouping which do occur. The first is that annual rates are "up-to-the-minute," reflecting current trends. Cohort rates, on the other hand, reflect holding power over time. However, cohort rates necessarily reflect only those students who did not transfer across BPS schools (students who had attended more than one school could not reasonably be attributed to one school only). A school which is high in annual rates but only medium in the cohort rate may experience unusually high dropout among those

students who enter after 9th grade.

EDUCATIONAL PROGRAMS

1) Special Education

Special Education services are designed to assist a wide variety of students with a very wide range of problems, from physical disabilities to emotional disorders to the need for remediation in a single subject. That the types of problems may have differing relationships to dropout is suggested by the low dropout rate in a school for the hearing impaired (Horace Mann) and the very high dropout rate in a school for those with behavioral and emotional problems (McKinley). Overall, however, students with any Special Needs prototype are more likely to drop out than are Regular Education students.

It should be noted that the comparison of Special Needs students to Regular Education students, as reported here, does not provide evaluative information concerning the impact of Special Needs services themselves on the likelihood of dropping out. Such an evaluation would require an identified sample of Regular Education students in need of but not receiving services which is otherwise comparable to a group of students needing and actually receiving services. This type of study is unlikely to be possible, since students who are identified as needing services are supposed to receive them.

2) Bilingual Education

In general, for annual rates, students who participate in Bilingual Education programs are somewhat less likely to drop out than are their same-language peers who do not participate in Bilingual Education. However, this was not true for all language groups, and the effect was generally modest. There was no particular effect of participation in Bilingual programs for the cohort dropout rates. Interpretation of these data is complex because there may be other differences which influence the choice of educational program (Bilingual Education or Regular Education) which have not been assessed to date. Therefore, these data cannot be taken as a direct evaluation of the effectiveness of Bilingual Education as a dropout prevention program.

3) Vocational Education

There is some evidence in support of the hypothesis that Vocational Education students, when compared to otherwise similar peers, are less likely to drop out. This difference could reflect the "holding power" of Vocational Education programs, but it may also reflect some motivational differences in the population of students who choose it from those who do not choose it. Vocational Education students, by virtue of choosing a specific

program, implicitly are stating that they have a goal for their educational efforts. On the other hand, students who will ultimately drop out may already be so alienated from school that they are less likely to choose a specific program. Again, the data reported here do not constitute a direct evaluation of Vocational Education programs.

IMPLICATIONS FOR FURTHER ANALYSIS

A principal goal of this report was to provide more precise and differentiated understandings of the characteristics of Boston's dropout problem. However, these studies raise almost as many questions as they answer. For instance, one issue which requires further analysis is the importance of racial/ethnic differences and socio-economic differences in relationship to dropout. Another issue which may have implications for the design of dropout intervention programs is the role of gender, specifically the large differences in dropout across gender for Blacks and Asians and the (relatively) small differences for Whites and Hispanics.

Examination of individual students' records, anecdotal data, and common sense all point to the fact that dropout is usually not a "sudden" occurrence. Often it is the culmination of a sequence of poor academic performance, nonattendance, and retention in grade. Often, though not inevitably, the student has low test scores (see "A Working Document on the Dropout Problem in Boston Public Schools," May, 1986), and the student may have been suspended at some point. In order to target intervention efforts appropriately, students must be identified (in some way that is not stigmatizing) before they drop out. In fact, they must be identified before they "walk away" (that is, effectively stop attending) before they are 16 and can officially be discharged.

Using the data reported in this document, it is easy to identify some apparent "risk" factors for dropout such as being overaged by 8th or 9th grade, being male, Hispanic, or in Special Needs. Based on these and some other factors identified in the course of this study, it would be possible to develop an "early warning system" to identify students at risk in a more specific way than has previously been possible. Such a system might help identify students as early as elementary school (and certainly no later than middle school) for whom dropout prevention efforts would be especially appropriate.

The work reported so far does not allow any statements to be made concerning the relative importance of the various "predictors" of dropout. For example, the question, "Is being retained in grade a stronger predictor of dropout than being in Special Education?" cannot be answered yet. At the same time, it may well be that the relative importance of "predictors" of dropout varies somewhat by racial/ethnic group and gender. While it is potentially useful to note differences in dropout rates that may be associated with characteristics such as gender or racial/ethnic group

(independent of their association with other predictors, such as Special Needs classification, which occurs at a higher rate among males), a student's classification on these characteristics is not modifiable. It would be more useful to develop a clearer understanding of the potentially modifiable characteristics which serve as possible dropout predictors and their relative importance in different groups. This approach will be explored in further analyses by the Office of Research and Development.

TECHNICAL APPENDIX

Uses of Withdrawal Codes for Categorizing Outcomes

The withdrawal codes shown on the next page (along with their assignment of outcome categories) have been in use consistently since 1980. In prior years, from the mid-1970's through 1979-1980, there were a number of additional codes which could be used. In order to maintain comparability of data from the earlier years to the more recent years, the additional codes have been assigned to one of the outcomes used in this report (transfer, stay in school or graduate, dropout, probable dropout, and other loss). The assignments, showing only the codes not in current use, were as follows:

OUTCOMES (not in use)

<u>Code</u>	<u>Description</u>	<u>Transfers</u> <u>Stay in School</u> <u>or</u> <u>Graduate***</u>	<u>Error</u>	<u>Other Loss</u>	<u>Dropout</u>	<u>Prob. Dropout</u>
09	To Boston Evening School	X				
10	To Boston Public School		X			
18	Graduate - Below Grade 12		X			
19	Grade 12 certificate		X			
50	Unknown			X(*)		X(**)
20	Needed at home				X	
23	To an institution				X	
25	Illness				X	
27	Physical Handicap				X	
28	Mental Illness (Dr. certificate only)				X	
29	Behavioral Difficulty				X	
30	Academic Difficulty				X	
31	Inappropriate Curriculum				X	
32	Difficulty with School Staff				X	
33	Difficulty with Fellow Students				X	
34	Dislike for School				X	
35	Parents desire discharge				X	
36	Economic Programs				X	

(*) If student is under age 16

(**) If student is over age 16

(***) Early or late graduates. Students who graduate on time or continue in school are not discharged.

B.P.S. Discharge Codes
(used since 1980)
Assignment to Outcome Categories for Dropout Report

OUTCOMES

<u>Code</u>	<u>Description</u>	<u>Transfers</u>	<u>Graduate***</u>	<u>Error</u>	<u>Other Loss</u>	<u>Dropout</u>	<u>Prob. Dropout</u>
01	Boston Parochial	X					
03	Mass. Parochial	X					
11	Boston Private	X					
12	Mass. Public	X					
13	Mass. Private	X					
14	Out of State	X					
15	Home				X(*)		X(**)
16	Death				X		
17	Graduate (summer) (***)		X				
21	Work					X	
22	Military Service					X	
24	Over 16					X	
26	Marriage					X	
51	Registered - Did Not Report				X(*)		X(**)
52	Moved - No Forwarding Address				X(*)		X(**)
95	Expulsion				X		
99	Error			X			

(*) If student is under age 16

(**) If student is over age 16

(***) Early or late graduates. Students who graduate on time or continue in school are not discharged.

Sample Selection for Cohort Dropout Studies

The purpose of this note is to describe the sample selection procedures for cohort dropout data. The 9th grade cohort of 1984 (expected to graduate in 1988) will be used as an example.

There were 7105 students assigned to 9th grade during 1984-1985. This includes all students, even those who actually attended a Special Needs private school or were assigned to a "To Be Determined" school. Of these, 4907 were in the cohort. How the other 2198 were eliminated is detailed below.

EXCLUSIONS:

A) 992 students were not eligible during 1984-1985 for reasons listed below. (Of these, 256 had been potentially eligible in an earlier year, while 736 were not eligible in any year from 1982 through 1984.) Most of these 992 students were eliminated on the basis of their status on a single, mutually exclusive selection variable.

1) Never Attended. a) 782 students were DNR - "did not report" during 1984-1985 and did not attend school at all (includes newly-assigned students who never attended); or b) 11 students attended private Special Needs schools; or c) 9 students had actually withdrawn before the end of the preceding school year.

2) Data Errors. a) 9 students had an "error" (99) withdrawal code in 1984-1985 (these are explained on page 3).

3) 181 students were eliminated on the basis of two or more criteria (e.g., "error" withdrawal plus never attended).

(The sum of 1-3, above is: $782 + 11 + 9 + 9 + 181 = 992$.)

B) 1206 students were potentially eligible for the 1984 cohort but were also potentially eligible in 1983, 1982, or both. These students would be counted in an earlier cohort, whenever they first appeared. ($A + B = 992 + 1206 = 2198$).

For the sake of comparison, the cohort dropout rate for the 1206 students who were excluded in order to prevent their being counted in two or more cohorts (i.e., they otherwise met the eligibility criteria for 1983 and/or 1982 as well as 1984) was 77.6% (811 out of the 1045 who did not transfer to another school system). To count such students in more than one cohort year would be to seriously inflate the dropout rate.

Note: Before the final calculations of the cohort rates were done, the 799 students who eventually transferred out of BPS were also eliminated from the population, for a final total of 4108.

DATA APPENDIX

The tables on the next two pages are supplementary to Exhibits 1, 2, and 11 and 12 in the text.

TABLE A-1
DETAILED DATA ON ANNUAL RATE DROPOUT BY RACE 1977-1978 THROUGH 1988-1989
(GRADES 9-12 ONLY, TRANSFERS FROM BPS EXCLUDED)
SUPPLEMENT TO EXHIBITS 1 AND 2

	<u>BLACK</u>	<u>WHITE</u>	<u>ASIAN</u>	<u>HISPANIC</u>	<u>NATIVE AMERICAN</u>	<u>SYSTEMWIDE</u>
<u>1988-1989</u>	11.2% (929/8330)	10.7% (406/3799)	4.7% (76/1628)	14.7% (412/2808)	10.0% (7/70)	11.0% (1830/16635)
<u>1987-1988</u>	13.5% (1145/8502)	13.0% (541/4156)	6.3% (97/1545)	17.7% (481/2713)	16.4% (12/73)	13.4% (2276/16989)
<u>1986-1987</u>	13.4% (1167/8735)	14.3% (659/4621)	8.0% (123/1536)	18.0% (482/2678)	17.6% (13/74)	13.9% (2444/17644)
<u>1985-1986</u>	14.4% (1293/8963)	14.9% (738/4944)	9.4% (140/1496)	18.9% (493/2605)	15.6% (10/64)	14.8% (2674/18072)
<u>1984-1985</u>	17.0% (1637/9644)	16.9% (923/5465)	9.7% (150/1542)	22.9% (582/2537)	20.0% (13/65)	17.2% (3302/19253)
<u>1983-1984</u>	15.4% (1500/9711)	16.5% (922/5582)	12.2% (175/1440)	19.8% (470/2379)	31.3% (25/80)	16.1% (3092/19192)
<u>1982-1983</u>	14.3% (1433/10008)	16.3% (1033/6333)	11.8% (172/1462)	16.8% (377/2238)	11.9% (10/84)	15.0% (3025/20125)
<u>1981-1982</u>	11.5% (1161/10073)	13.3% (936/7047)	13.4% (195/1456)	15.2% (325/2139)	13.9% (11/79)	12.6% (2628/20794)
<u>1980-1981</u>	10.4% (1043/10009)	11.5% (873/7624)	6.2% (71/1141)	16.6% (348/2101)	6.0% (5/84)	11.2% (2340/20959)
<u>1979-1980</u>	12.4% (1214/9779)	13.2% (1065/8039)	6.0% (57/947)	18.5% (374/2025)	17.5% (14/80)	13.1% (2724/20870)
<u>1978-1979</u>	12.8% (1220/9519)	13.6% (1144/8420)	5.4% (43/790)	17.1% (325/1899)	16.3% (15/92)	13.3% (2747/20720)
<u>1977-1978</u>	10.6% (985/9284)	11.2% (1032/9180)	2.6% (19/722)	15.4% (265/1717)	14.1% (11/78)	11.0% (2312/20981*)

* Total differs by 14 from that shown in Exhibit 1 because there were several records with missing or invalid data for race.

TABLE A-2
DETAILED DATA ON COHORT DROPOUT RATE BY RACE FOR 9TH GRADE COHORTS OF 1979 THROUGH 1984
(TRANSFERS FROM BPS EXCLUDED)
SUPPLEMENT TO EXHIBIT 12

	<u>BLACK</u>	<u>WHITE</u>	<u>ASIAN</u>	<u>HISPANIC</u>	<u>NATIVE AMERICAN</u>	<u>SYSTEMWIDE</u>
<u>1984 (1988)*</u>	35.6% (699/1964)	37.9% (447/1180)	20.7% (63/305)	48.5% (311/641)	** (9/18)	37.2% (1529/4108)
<u>1983 (1987)*</u>	37.0% (719/1942)	40.8% (468/1147)	22.7% (68/299)	53.8% (314/584)	** (9/16)	39.6% (1578/3988)
<u>1982 (1986)*</u>	38.8% (819/2111)	40.6% (516/1271)	24.3% (72/296)	49.1% (272/554)	** (7/19)	39.7% (1686/4251)
<u>1981 (1985)*</u>	36.5% (794/2175)	40.0% (606/1514)	29.3% (79/270)	49.9% (254/509)	** (10/19)	38.8% (1743/4487)
<u>1980 (1984)*</u>	35.2% (834/2370)	38.4% (628/1636)	21.6% (54/250)	48.3% (243/503)	** (4/16)	36.9% (1763/4775)
<u>1979 (1983)*</u>	33.0% (720/2179)	33.5% (574/1712)	12.9% (26/202)	42.5% (214/504)	** (4/7)	33.3% (1538/4614)

* The beginning (9th grade) year (for September) is shown along with the expected year of graduation for the cohort.

** The numbers of Native Americans are too small to permit reliable comparison of percentages.

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